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AUTHOR Bean, John P.
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ABSTRACT

Variables that best explain variance in student attrition for 168 freshmen students from a college of agriculture within a major midwestern university were studied in 1979. Variables were selected from a theoretical causal model of student attrition (Bean, 1981), a review of the literature (Bean, 1978), and five empirical investigations conducted by Bean. Nine main variables were: parents' educational attainment, performance in high school, absenteeism, the practical value of one's education, confidence in being a successful student, intent to leave, university grades, informal contact with faculty, and course attractiveness. Responses to a Likert-scale type attitude measure and information about the students were analyzed using stepwise multiple regression analysis. Intent to leave was the strongest indicator of attrition. The nine variables and the interaction of five of these with grade point average were found to account for 62 percent of the variance in attrition. Students with different levels of academic ability withdrew from the institution for systematically different reasons. The effects of the variables (particularly practical value, absenteeism, confidence, faculty contacts, and courses) differed depending upon academic ability. Academic performance is not only an important predictor of student attrition, but interacts strongly with other variables affecting decisions to leave school. The importance of studying small, homogeneous groups in order to accurately describe a selected group (e.g., agricultural college students) is noted. A bibliography is appended. (SW)

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THE INTERACTION EFFECTS OF GPA ON OTHER DETERMINANTS OF STUDENT ATTRITION IN A HOMOGENEOUS POPULATION

JOHN P. BEAN

ASSISTANT PROFESSOR OF HIGHER EDUCATION
DEPARTMENT OF HIGHER EDUCATION
236 EDUCATION BUILDING
INDIANA UNIVERSITY
BLOOMINGTON, INDIANA 47405

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THE INTERACTION EFFECTS OF GPA ON OTHER DETERMINANTS OF STUDENT ATTRITION IN A HOMOGENEOUS POPULATION

ABSTRACT

Nine variables and the interaction of five of these with GPA were found to account for 62 percent of the variance in attrition in a homogeneous population of freshmen students from a single college at a major midwestern university (N=160). The importance of studying small, homogeneous groups is discussed. The interactions allow for the creation of three new equations which represent the influence of the determinants on attrition at representative GPA levels. Non-intuitive findings for the variables which were found to interact with GPA (practical value, absenteeism, confidence, faculty contact, and course attractiveness) are discussed.

THE INTERACTION EFFECTS OF GPA ON OTHER DETERMINANTS OF STUDENT ATTRITION IN A HOMOGENEOUS POPULATION

Introduction

There have been myriad studies of students and whether they enter college after high school, and if so, how long they remain in school, and whether they complete a degree. These studies have fallen into three general categories. The first of these includes a plethora of univariate studies linking one or more variables to dropout (Sexton, 1965; Lenning, Munday, Johnson, Vander Well, and Brue, 1974). The second group of studies are the educational attainment studies, where educational attainment is usually an intervening variable in a model of status attainment (Sewell, Hauser, and Featherman, 1976; Jencks, 1979). This group of studies has focused on the prematriculation characteristics of students (such as age, sex, religion, race, parents' education, etc.), and followed age cohorts as their members progressed or failed to progress to each higher grade level, through graduation, and into jobs. The third group of studies has attempted to explain either theoretically or empirically the longitudinal process of dropout (Spady, 1970, 1971; Tinto, 1975; Bean, 1980, in press a, in press b; Pascarella, 1980). These models attempt to indicate how variables, or sets of variables, are interrelated in a complex longitudinal process which culminates in the decision of a student to stay or drop out of school.

These models indicate the profitability of using multivariate procedures, especially multiple regression, in estimating the models. The longitudinal nature of the models

suggests that path analysis (Heise, 1969; Kerlinger and Pedhazur, 1973) would also be a useful statistical tool to use in unraveling the dropout process. The treatment of interaction effects (Cohen and Cohen, 1975) can only be done crudely in path analysis. The treatment is accomplished by partitioning the sample into, for example, high and low confidence groups if confidence has been found to interact with other variables when the criterion variable is regressed upon them (see Bean, 1981 for an example). Also, the theoretical models identified above lack parsimony--they are cluttered with variables.

The purpose of this paper is to identify a small number of variables and their first level interaction terms which best explain the variance in dropout. In the first part of this study, the variables selected for inclusion in the regression equations will be described, and the second part will present the findings for the main effects variables and interaction terms which significantly increase the explained variance in dropout. Finally, significant interactions will be treated in a way suggested by Cohen and Cohen (1975). They provide a method by which the differential influences of the main effects variables on the criterion can be estimated mathematically at different levels of the interacting variable.

The Independent Variables and Their Theoretical Rationale

The main effects variables for this study were selected from a theoretical causal model of student attrition (Bean, 1981), an extensive review of the literature (Bean, 1978), and five empirical investigations by the author. The variables selected

were: parent's educational attainment, performance in high school, absenteeism, the practical value of one's education, confidence in being a successful student, intent to leave, university grades, informal contact with faculty, and course attractiveness.

Previous studies of student attrition by Pascarella and Terenzini (especially 1979), based on the theoretical models of Spady (1970) and Tinto (1975), have indicated the importance of controlling statistically for background characteristics when estimating the effects of independent variables on dropout. Two background variables were selected for this study: performance in high school and parents' educational level. Sewell and Hauser (1976) best described the effect of these variables on educational attainment. The effects of high school performance (grade point average and ACT scores) on college grades has been well substantiated (Cope and Hannah, 1975).

Absenteeism has been less often studied with relation to attrition than one might suspect, due to the interest in absenteeism both in studies of high school dropouts and turnover in work organizations. The correlation between absenteeism and turnover is reasonably well established (Price, 1977; Anderson, 1981; Dalton and Perry, 1981). The effects of absenteeism in studies of college student attrition probably have been masked due to the substantial interaction with GPA which will be described later.

The practical value of one's education, that is, the perceived usefulness of one's education for getting a job, has been shown to have a significant negative effect on dropout and

intent to leave (Bean, 1980, in press a). General support for the variable comes from the human capital investments principle, where people will invest in their own development when they perceive that they will benefit from such an investment (Farrell, 1977).

The effects of confidence on other behaviors has been little studied, with the exception of Griffin and Keogh (1981). This variable was found to interact with several others in a previous study by the author (Bean, 1981a), and to be significantly related to practical value among women at a liberal arts college (Bean and Creswell, 1980).

The effects of College GPA on attrition has long been theorized (Spady, 1970), and a consistent negative relationship generally has been shown to exist (Pantages and Creedon, 1978). Astin (1970) suggested that interactions among variables be investigated, but with a few exceptions (Pascarella and Terenzini, 1979; Bean, in press a) little work has been done in the area. Pascarella and Terenzini did find that for men, GPA interacted significantly with only one variable, highest expected academic degree, in predicting attrition. The variable did not interact at all in the case of women.

Pascarella (1980) and Pascarella and Terenzini (1979) have identified student-faculty interactions as one of the chief factors affecting student attrition. Although in previous studies by the author (Bean, 1980, in press a) the main effects of this variable were not found to be significant, the variable was not evaluated in terms of possible interactions in these earlier studies, and thus it was included in this study.

In previous studies by the author (Bean, 1980; in press a, b) the attractiveness of courses offered by the institution was found to be one of the best predictors of attrition. In part, this seems to reflect a utilitarian attitude toward education--I'll stay in school as long as I'm getting what I want out of it. This variable may also reflect some measure of alienation. By this reasoning, students closed out of courses by the bureaucracy of registration feel helpless to do anything about thier situation, and withdraw from school. The variable may also be analogous in some ways to "job content," a variable used in the study of job satisfaction (Smith, Kendall, and Hulin, 1969). These authors found that dissatifaction with the content of a job was one indicator of a lack of satisfaction with work, increasing the likelihood of turnover.

Intent to leave has been widely used in the literature on turnover in work organizations as a predictor of turnover, and even as a surrogate for actual turnover (Bluedorn, 1976). The theoretical justification for the inclusion of intent comes from the work of Fishbein and Ajzen (1975, Ajzen and Fishbein, 1980). Also, the variable has been demonstrated to be the variable which was most highly correlated with attrition in a number of studies (Johnson, 1980; Bean, 1980, in press a, b).

Methodology

The site chosen for this study was the College of Agriculture at a major midwestern land-grant university. Questionnaires were mailed to all 405 registered freshmen in the College in April, 1979. Of these, 194 were returned (48%). Only

students who were enrolled in the College of Agriculture as full-time freshmen, who were not married, caucasian, between the ages of 18 and 21, and who were not foreign, were analyzed. There were 168 such students. Students enrolled in a single college were selected for this analysis to exclude some possible confounding variables (Kerlinger, 1973). A homogeneous group was selected in order to increase the accuracy of the description of dropout for a selected group rather than to choose a "representative" sample of freshmen. Thus it was accuracy, rather than generalizability, that dictated the sample selection. Of the group analyzed, 128 (76.2%) were men, and 40 (23.8%) were women; 160 were age 18 or 19, 8 were age 20 or 21; all were single and registered as full-time students; three were transfer students; 163 were state residents; 7 were in their first semester, 159 in their second semester, and 2 in their third semester; the mean ACT score for this group was 23; the mean first semeser grade point average for this group was 2.75 on a four point scale. Based on ACT composite score distribution for the entire freshman class, this sample was biased toward higher ability students.

Data were collected by means of a questionnaire. Indicators of attitudes were based on Likert scales which ranged from "a very small extent," scored 1, to "a very large extent," scored 5. Other questions asked for factual information, such as ACT scores, high school grades, and parents' educational level. All information used in this analysis was derived from questionnaire data with the exception of the dependent variable. Dropout information was taken from enrollment tapes from the university registrar. Dropout was scored 0 for students who stayed in

school, 1 for students who failed to register for the second semester of 1979-80 academic year, and 2 for students who failed to register for the first semester of the 1979-80 academic year. The mean score for dropout was .325 (S.D.=.696). Of the 160 students used in the final analysis (reduced by 8 due to missing data for the criterion), 24 dropped in the fall of 1979, 4 in the spring of 1980, and 132 remained enrolled. The procedures used to establish the reliability and validity of these measures is discussed elsewhere for the entire sample from which this data was taken (Bean, in press a). Definitions of the variables, and the items used in the study are presented in Table 1.

TABLE 1 ABOUT HERE

The data were analyzed using multiple regression. Linearity was examined using SPSS subprogram Breakdown, found to exist, and the variables were not transformed. The few missing values in the data set were treated by the substitution of the population mean for the missing value, which does not affect the regression coefficients, but does allow the case to be included using listwise deletion (Cohen and Cohen, 1975). In this instance, only the eight cases which had missing data on the criterion were excluded from the sample, reducing the sample used in the analysis from 168 to 160 cases.

Additivity for the relationships between the independent variables and the criterion was assessed by examining the interaction terms. Multiple regression was first used to estimate the influence of the background and main effects

variables, and next the eight sets of interaction terms (data not presented here). That is, first-order interactions between each independent variable and all other independent variables was assessed. Where interaction terms were found to be significant while controlling statistically for main effects and other first-order interactions, they were treated in a method suggested by Cohen and Cohen (1975). (Note 1)

The results for setwise multiple regression are presented in

TABLE 2 ABOUT HERE

Table 2. This table includes both the standardized (beta) and unstandardized (B) regression coefficients. Performance in high school and parents' education were entered first to act as statistical controls for entry-level characteristics. Both variables had a statistically significant negative relationship with dropout (column 2, Table 2) but only accounted for about 5 percent of the variance in the criterion. The main effects variables were added in setwise fashion at this point. The results for this regression are presented in columns 3 and 4. Three variables had statistically significant main effects on the dropout: parents' education (beta = -.127); practical value (beta = -.148); and intent to leave (beta = .638). It was clear that the relative influence of intent to leave was far and above the greatest of the three significant variables. All together, the nive variables in this regression accounted for 55.3 percent of the variance in dropout. (Note 2) If intent to leave is taken out of the regression, the eight remaining variables accounted

for only 28.3 percent of the variance in dropout. By itself, intent accounted for 49.0 percent of the variance in dropout (regressions not reported). In the regression containing all these variables, intent to leave accounted uniquely for 27.0 percent of the variance in dropout, the other eight variables accounted uniquely for 6.3 percent of the variance, and intent to leave and the other eight variables shared 22.0 percent of the variance in dropout. The importance of intent to leave as a predictor of dropout was obviously quite great.

At this point, each of the seven sets of nine interaction terms was entered following the main effects variables in seven separate regressions. That is, controlling for performance and parents' education, and the other main effects variables, the interaction terms for one variable and the eight independant other variables were entered into a regression. This procedure was used for each of the seven main effects variables. The greatest number of significant interaction terms, and the greatest increase in explained variance came from the setwise introduction of the GPA interaction terms. Controlling statistically for these, other interaction terms, statistically significant when introduced with their own set, were added one at a time. None significantly contributed to the explained variance (using the .02 increase in explained variance as the criterion for significance (Land, 1961)).

The final regression (columns 5 and 6) contained only those interaction terms for GPA and the other main effects variables. The interaction between GPA and intent, GPA and performance, and GPA and parents' education was extremely slight, and not

statistically significant. In order to meet the rule of thumb that at least ten cases exist per variable in a regression, the intent x GPA, performance x GPA, and parents' education x GPA interaction terms were dropped. That is, because of possible problems with degrees of freedom, it was felt that the final regression equation should have no more than 14 variables (regression=14, residual=145). Thus, only five of the eight possible which interaction terms were included.

The fourteen variables in this equation accounted for 62.1 percent of the variance in student attrition (adjusted R squared = .584). The beta weights are largely uninterpretable due to the high degree of multicollinearity between the main effects variables and the interaction terms. They do, however, show a high degree of statistical significance as seen by their univariate F-ratios (reported only in terms of levels of significance in column 6). The unstandardized regression coefficients, however, can be interpreted through the method suggested by Cohen and Cohen (1975). First, the regression equation is rewritten using the unstandardized (B) regression coefficients:

$$Y = -.036\,(PER) - .041\,(PAR) + .172\,(INT) - .324\,(PRA) + .459\,(ABS) + .417\,(CON) - .516\,(FAC) + .411\,(COR) - .043\,(GPA) - .109\,(COR \times GPA) + .094\,(PRA \times GPA) - .126\,(CON \times GPA) - .154\,(ABS \times GPA) + .155\,(FAC \times GPA) + .269$$

At this point, meaningful values of the variable GPA can be substituted in the above equation. It is by this process that non-intuitive discoveries about the effects of the interacting

variables on dropout can be made. Each equation represents the influence of the main effects variables at the selected GPA level. These equations are:

at GPA = 4.0, Y (DROP) = -.036 (PER) -.041 (PAR) +.172 (INT)
(A average) +.052 (PRA) -.121 (ABS) -.087 (CON)
+.102 (FAC) -.025 (COR) +.105;

at GPA = 2.5, Y (DROP) = -.036 (PER) -.041 (PAR) +.172 (INT)
(C+ average) -.089 (PRA) +.110 (ABS) +.102 (CON)
-.129 (FAC) +.139 (COR) +.166

at GPA = 1.0, Y (DROP) = -.036 (PER) -.041 (PAR) +.172 (INT)
(D average) -.230 (PRA) +.341 (ABS) +.291 (CON)
-.361 (FAC) +.302 (COR) +.228

Unstandardized regression coefficients are used in these equations, so it is appropriate to compare B values for the same variable in different equations, but it is not appropriate to compare B values for different variables in the same equation. Since performance (PER), parents' education (PAR), and intent to leave (INT) were found not to interact with GPA, their effects on the criterion remain practically constant at the differing levels of GPA.

Discussion.

Since a selected and not a random sample was used in this study, no claims for the generalization of these results can be made. This selection procedure does not preclude the results from being generalizable to other similar populations, but one cannot assume that these findings apply to other students without further study.

Both performance and parents' education had a statistically significant negative influence on dropout, although the statistical significance was lost for performance in the final regression, probably due to multicollinearity with the GPA interaction terms. Intent to leave was the strongest predictor of attrition, and had a statistically significant positive relationship with attrition in all three regressions. This finding was not surprising in view of past research. The Y intercept indicates the mean value for attrition at the three different levels of GPA. It changed from .105 at GPA = 4 to .228 at GPA = 1, which indicated that students with lower GPAs dropped out at higher rates than students with high GPAs. None of these findings was unexpected. Some of the findings for the variables which interacted with GPA are.

Practical value (PRA). The influence of practical value on the criterion changes from +.052 at GPA = 4 to -.230 at GPA = 1. Thus, the effect of one's perceiving his or her education to be of practical value in reducing dropout was dramatically higher for students with low GPA's (the slope changing from +.052 to -.230). The fact that practical value had a slight positive influence on attrition for students with high GPA's was probably an artifact of the estimation procedure as extreme values were approached. However, if an institution can develop a sense of the practical value of the education for students with low GPAs, they are more likely to retain these students. To try to develop a sense of the practical value of the education for students with high GPAs is probably a waste of resources for reducing attrition or may even be counterproductive.

Absenteeism (ABS). It is generally assumed that students who miss classes are more likely to drop out than students who attend classes. The variable, however, has not received widespread study, and the disordinal interaction discovered here should be of interest to those who make blanket policies about absenteeism. The influence of absenteeism on dropout changed from a -.121 for A students to a +.341 for D students. The three equations above indicated that for students with high GPAs, absenteeism actually had a slight negative influence on attrition. This might be explained by boredom, e. g., bright students who felt compelled to attend every class become bored and were more likely to leave than bright students who occasionally skipped a class. For students with low GPAs the effects were remarkably different. Students with low GPAs who miss classes were much more likely to drop out of school than students with low GPAs who attended classes. This might be explained by the idea that students who quit going to classes and who were doing poorly academically had given up, whereas students who were doing poorly academically but kept attending classes were still trying, and a higher number of these students stayed in school than those who had given up trying.

Confidence (CON). One would logically think that students who are more confident of their abilities to be successful students would be more likely to stay in school. In fact, the zero-order correlation between confidence and attrition was -.327. The interaction found in the above equation yielded some non-intuitive but interesting findings related to confidence. For students with high GPAs, there was a negative influence of confidence on attrition (-.087). For students with a C+ average,

the effect of confidence on attrition began to be positive (.102), and for D students, being confident had a strong positive effect on attrition (.291). There are two plausable explanations for this. The first is cognitive dissonance (Festinger, 1957), where the student who is confident of his or her abilities to be a successful student, but is in fact getting low grades, finds the situation dissonant and withdraws. One may speculate that this situation is likely to arise when a student does well in high school, and thinks that they can do well academically in college, but finds that this is not the case and withdraws. The second explaination is that students who get low grades, but are confident in their abilities to be successful students, are probably also confident in their abilities to succeed in other situations. Thus, they would not be as hesitant about dropping out of school as someone who lacks confidence. The student who lacks confidence may think, "Even though I'm not doing well here, I wouldn't do any better at anything else." One may thus infer that confidence is only valuable for reducing attrition for students who are already doing well academically. Confidence must be earned by competence in order to be effective in reducing attrition.

Faculty Contact (FAC). It is widely assumed that contact with faculty members will reduce attrition, although as Pascarella and Terenzini (1979) demonstrated, different types of interaction with faculty members have different effects on students. Since the indicator here was of the amount of contact rather than the type of contact, the findings may be somewhat limited. They are interesting nonetheless. For A students, contact with faculty had a positive influence on attrition

(.102). For C+ students the effects began to be negative (-.129), and for D students, faculty contact had a strong negative influence on dropout (-.361). The fact that faculty contact with academically able students had a positive influence on attrition is not easy to explain. It may in part reflect able students contacting faculty about transferring. For lower ability students, there are two plausable explanations for this finding for faculty contact. First, contact with faculty helps students to stay in school by giving them attention, information, or other types of encouragement to continue. A second possible explanation is that the population of students who are having trouble academically and who seek out advice from the faculty are students who "know how to work the system." That is, it is not a random group of low achievers who seek out academic help, but the group of students who already know how to operate in a complex environment, but who are not currently achieving up to par. It would be this group of "operators" who would be more likely to stay in school anyway. The variable faculty contact may indicate what type of student makes contact with the faculty rather than the value of out of class contact with faculty members.

Courses (COR). The findings for courses are again counterintuitive. Having the courses one wants to take had a negative correlation with dropout (-.198), as one would expect. The interaction effects based on GPA cast some different light on the influence of courses on dropout. For A students, the relationship between between courses and dropout was very slight, and negative (-.025). for C+ students, the slope changed to .139, and for D students, the positive effects of courses on dropout were pronounced (.302). As in the case of confidence,

cognitive dissonance again seems to be operating. For students who were doing well academically, having the courses one wanted to take had little influence on attrition. When students believed that they had the courses they wanted to take, but were doing poorly academically, then they were in a dissonant position. If students were doing poorly in courses they really didn't like, they would have an excuse for doing poorly. If they were taking the courses they wanted to and still were doing poorly, they would have no excuse, and would be more likely to withdraw.

Conclusions

Perhaps the most important conclusion that can be drawn from this research is that among the students in the sample, students with different levels of academic ability withdrew from the institution for systematically different reasons. For the three equations containing the five interaction terms, the influence of the independent variables on dropout, either in a positive or a negative direction, was strongest for low achievement students. The reasons why students leave school who do poorly academically can be better understood than those students who do well academically. The nagging question of why students who are well qualified academically leave school is not answered by the current study. It is probably most essential to realize that the effects of the indepenent variables (particularly practical value, absenteeism, confidence, faculty contacts and courses) differ depending upon academic ability. Any blanket policy related to these five variables will likely be both functional and dysfunctional, and institutions should be sensitive to this potential problem in the formulation of policies related to

student retention programs. Academic performance is not only an important predictor of student attrition, but interacts powerfully with other variables affecting decisions to leave school.

This study also demonstrates the importance of studying homogeneous populations. Interactions based on sex (Spady, 1971; Bean, 1980, in press a); grade level (Karmas, 1975); institutional type (Pascarella and Chapman, 1982), confidence (Bean, in press a), and the current study using GPA indicate that the potential numbers of interaction effects operating in the very complex behavior associated with attrition may necessitate studying smaller, more homogeneous populations in order to identify the factors affecting attrition in them.

The explained variance in this study is comparatively high, with many recent multivariate studies only explaining about one third of the variance in attrition. When intent to leave is excluded from the regression, the explained variance drops to 39 percent, which would be more typical. Because intent to leave is such a powerful predictor of student attrition, and because not all variables act through this variable in affecting attrition (Bean, in press a), it seems important to control statistically for the effects of intent to leave even though it may inflate the explained variance without increasing the explanation of what is happening in the student attrition process. Control for intent to leave in future research does seem advisable.

Finally, it is hoped that this paper has indicated the extreme complexity of the attrition process. This level of complexity provides further support for using homogeneous

populations when studying student attrition, but also indicates that researchers in student attrition should not make naive assumptions about how certain variables are affecting student behavior. Interaction effects must be studied in detail in the future. A failure to do so represents a serious problem in increasing our understanding of the attrition process. Interaction effects may challange many of our assumptions about how these variables operate. Future studies of interaction effects in other homogeneous populations using the procedure for treating interactions presented in this paper would seem to be extremely valuable. Without replication, generalization of the findings of this study must be done cautiously.

NOTES

1. Given an equation representing a hypothetical relationship:

$$Y = B1\ (GPA) + B2\ (FAC) - B3\ (GPA \times FAC) + A$$

where Y is the estimation of dropout, arbitrary values for for the slopes (B1,2,3) and A (the Y intercept) can be assigned. Then the differential effects of GPA at several meaningful levels can be estimated. For example, at GPA = 3, the regression equation might be:

$$Y = .3\ (3) + .2\ (FAC) - .4\ (3 \times FAC) + 1$$
$$Y = .9 + .2\ (FAC) - 1.2\ (FAC) + 1$$
$$Y = -1.0\ (FAC) + 1.9$$

At GPA = 1, the results become:

$$Y = -.2\ (FAC) + 1.3$$

This would indicate the for students with a GPA of 3, contact with the faculty (FAC) had a much greater influence on reducing attrition than for students with a GPA of 1 (the slope changing from -1.0 to -.2).

2. When intent to leave is removed from the regression containing the background variables, the main effects variables, and the five significant interaction terms, the explained variance is 38.8 percent. That is, the addition of the interaction terms to the equation lacking intent to leave

changes the explained variance from 28.3 to 38.8 percent, an increase of 10.5 percent in explained variance.

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TABLE 1. VARIABLE DEFINITIONS, MEANS, STANDARD DEVIATIONS AND ITEMS USED (N = 160)

VARIABLES	MEANS	S.D.	DEFINITION AND ITEMS
Intent to Leave	3.87	2.46	The estimated likelihood of discontinuing one's membership in the inst. ITEMS: Do you expect to return to this university next fall? Do you expect to be enrolled at this university one year from today?
Performance	6.35	1.09	High school grades and composite ACT scores. ITEMS: What was your overall high school grade point average (on a 4-point scale)? What was your ACT composite score?
Parents' ed.	7.56	2.16	The degree of educational attainment of the student's parents. ITEMS: Which item below best describes your mother's (father's) education?
Absenteeism	1.52	0.74	The degree to which a student fails to attend classes. ITEM: In a typical week, how many classes would you miss without a medical or legitimate excuse?
Practical value	7.42	2.16	The degree to which one's education is believed useful for getting a job. ITEMS: How useful do you think your education will be for getting: Future employment? A really good job?
Confidence	3.58	0.99	The student's belief in his or her capacity to be a successful student? ITEM: To what extent are you confident in your ability to be a successful student here?
GPA	2.82	0.75	University grade point average. ITEM: What is your cumulative grade point average at this university?
Faculty contact	2.58	1.12	Frequency of out-of-class contact with faculty members. ITEMS: How often do you talk to faculty members outside of a classroom situation?
Courses	3.68	0.89	The extent to which a student is able to take the courses he or she desires. ITEMS: To what extent does this university offer the courses you want to take?

TABLE 2. RESULTS FOR SETWISE MULTIPLE REGRESSION
(CRITERION=DROPOUT)

INDEPENDENT VARIABLES (COLUMNS)	B (1)	BETA (2)	B (3)	BETA (4)	B (5)	BETA (6)
Performance	-.114	-.178*	-.053	-.083	-.036	-.057
Parents' ed	-.053	-.166*	-.041	-.127*	-.041	-.123*
(constant)	(1.452)					
R squared	.063					
Adj R sq	.051					
df	(2,157)					
Intent			.181	.638***	.172	.606***
Absent			.084	.089	.495	.526**
Prac value			-.052	-.148*	-.324	-.925***
Confidence			.037	.053	.417	.594*
GPA			-.043	-.047	-.041	-.045
Faculty con			-.049	-.078	-.516	-.828***
Courses			.070	.089	.411	.523*
(constant)			(0.385)			
R squared			.553			
Adj R sq			.526			
df			(9,150)			
COR x GPA					-.109	-.650
PRA x GPA					.094	1.136***
CON x GPA					-.126	-.831*
ABS x GPA					-.154	-.457*
FAC x GPA					.155	.892**
(constant)					(0.269)	
R squared					.621	
Adj R sq					.584	
dj					(14,145)	

*p = .05; ** p = .01; *** p = .001 (N = 160)